

EMILY MANHIRE HILL

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Department of Computer & Information Sciences

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SUMMARY

Motivated self-starter with demonstrated leadership skills, ability to recognize and pursue innovative, collaborative research with practical impact, and proven track record of publication in multiple areas of software engineering, many at top conferences.

PROFILE

- **Variety of research experiences:** developed innovative natural language analyses to improve software maintenance, reuse, and comprehension tools; implemented analyses as part of interactive GUI Eclipse plug-in for exploring Java programs; interest in developed tools shown outside university community; applied formal concept analysis to automate software testing for web applications; and designed software engineering experiments to demonstrate effectiveness of developed tools and analyzed data using t-tests & ANOVA.
- **Significant experience analyzing textual and numerical data,** including mining information from large corpora (over 100 million lines of code in 9,000 Java programs) **& applying a variety of learning techniques:** statistics (logistic regression), machine learning (decision trees, genetic algorithms), and human learning (exploratory data analysis).
- **Technical qualifications:** *programming languages* [Java, perl, bash, C, C++, MPI]; *programming tools* [Eclipse, make, lex, yacc, Spin]; *web technologies* [php, JSP, Java Servlets, MySQL, Apache, Tomcat, Resin, CSS, HTML, XML]; *scientific utilities* [SAS, gnuplot, C5.0, Weka]; *document processing* [latex, Office]; *operating systems* [Mac OS X, SunOS, Red Hat, Ubuntu, Windows].

EDUCATION

Ph.D. in Computer & Information Science, University of Delaware, Newark, DE: expected Aug 2009.

Thesis: *Developing Natural Language-based Software Analyses & Tools to Expedite Software Maintenance.*

Advisors: Dr. Lori Pollock & Dr. K. Vijay-Shanker.

M.S. in Computer & Information Science, University of Delaware, Newark, DE: May 2005.

B.S. in Computer Science, Minor in Mathematics, The College of New Jersey, Ewing, NJ: May 2003.

INDUSTRY & GOVERNMENT EXPERIENCE

Intern, Business Signatures Corporation, Redwood City, CA: Jun - Aug 2005. Research & documented ways in which Formal Concept Analysis could be applied to the product, including modeling user behavior, analyzing log files, and calculating reduced test suites for performance testing web applications.

Intern, Visiting Student Enrichment Program, NASA Goddard Space Flight Center: Jun - Aug 2001. Investigated available software tools that test and fix web pages for web accessibility and compliance with Section 508 under the Rehabilitation Act. Educated Goddard web developers within tight compliance deadline.

SELECT PUBLICATIONS

Effective written and verbal communication skills. Significantly involved in 19 unique publications, including 2 journal, 11 conference, and 6 workshop publications. Frequently lead group discussions and give oral presentations.

- **Emily Hill,** Lori Pollock, and K. Vijay-Shanker. "Introducing a Software Word Usage Model for Software Engineering Tools." Under submission to *The 7th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, 2009.
- **Emily Hill,** Lori Pollock, and K. Vijay-Shanker. "Automatically Capturing Source Code Context of NL-Queries for Software Maintenance and Reuse." *International Conference on Software Engineering (ICSE)*, May 2009. 12% acceptance rate.
- **Emily Hill,** Zachary P. Fry, Haley Boyd, Giriprasad Sridhara, Yana Novikova, Lori Pollock, K. Vijay-Shanker. "AMAP: Automatically Mining Abbreviation Expansions in Programs to Enhance Software Maintenance Tools." *5th Working Conference on Mining Software Repositories (MSR)*, May 2008. **Best Paper Award**, 40% acceptance rate.
- **Emily Hill,** Lori Pollock, K. Vijay-Shanker. "Exploring the Neighborhood with Dora to Expedite Software Maintenance." *International Conference on Automated Software Engineering (ASE)*, Nov 2007. 12% acceptance rate.

SELECT HONORS

Recognized achiever honored with 18 awards, consistently earning 1-2 per year since high school.

- **Frank A. Pehrson Graduate Student Achievement Award.** Awarded by the CIS faculty to an outstanding graduate student, 2009.
- **NSF Graduate Research Fellowship.** Full tuition and stipend, 2005-2008.
- **Lauri Pfeffer Shinn Memorial Award.** Given annually to a women CIS student in recognition of contributions to the CIS department and academic success, 2007.
- **First Year Fellowship.** Funding awarded by the CIS department in addition to regular stipend, 2003-2004.
- **Honorable Mention,** Computing Research Association (CRA) Outstanding Undergraduate Award, 2003.
- **CRA-W CREW Awards.** Collaborative Research Experience for Women in Undergraduate CS & E funded by the Computing Research Association's Committee on the Status of Women in Computing research (CRA-W), for projects "Word Conflation Module in Question & Answering System Development" and "Parallel Genetic Algorithms for Weather Prediction," 2002-2003.
- **CRA-W Distributed Mentor Program.** Summer research project, "Modeling Web Applications for Program Analysis," at the University of Delaware under advisor Dr. Lori Pollock, funded by CRA-W, 2002.
- **New Jersey Bloustein Distinguished Scholar.** Scholarship awarded by the state of New Jersey, 1999-2003.

PROFESSIONAL ACTIVITY SUMMARY

Demonstrated history of leadership abilities and active contributor to the professional community.

- **Program Committee Member,** MSR Mining Challenge 2009 (6th Working Conference on Mining Software Repositories, General Mining Challenge), 2009.
- **NSF Award CCF-070240.** Participated in writing and discussion. PIs: Lori Pollock and K. Vijay-Shanker, "Applying and Integrating Natural Language Processing Analysis of Programs to Aid in Software Maintenance and Evolution," 2007.
- **President,** Computer & Information Sciences Graduate Student Association, 2005-2007.
- **CISters Co-Founder, Event Coordinator, Webmaster,** 2005-2007. CISters is a group for women in technology-driven fields at the University of Delaware.
- **Travel Award Co-Organizer.** Developed and presented case study to the UD CIS Department and UD Dean of Arts and Sciences, funding 10 graduate and undergraduate women to attend the 2006 Grace Hopper Conference, October 2006.
- **Webmaster,** 2006 International Symposium on Software Testing and Analysis (ISSTA '06), 2005-2006.
- **Organizing Committee Member & Webmaster,** Mid-Atlantic Student Workshop on Programming Languages and Systems, April 2005.
- **UPE Chapter President,** 2002-2003; member 2001-2003.
- **Vice President of Electronic Communications & Web Master,** Golden Key Honor Society Chapter, 2001-2003.

RESEARCH EXPERIENCE

Ability to recognize and pursue innovative research with practical impact. Collaborations with multiple researchers, including graduate, undergraduate, and industry. Served as mentor for 5 undergraduate students, and co-mentored 3 graduate students with advisors.

Natural Language Program Analysis. Dr. Pollock & Dr. Shanker, 2006 – present. Collaborators: David Shepherd, Giriprasad Sridhara, Kishen Maloor, Yana Novikova, Meilani Williams, Haley Boyd, Eric Enslin, Zak Fry, Brian Robinson.

Analysis of Sensitive Debugging Feedback. Dr. Pollock, 2005 – 2006.

Automated Testing of Web Applications. Dr. Pollock, 2004 – 2007. Collaborators: Sreedevi Sampath & Sara Sprenkle.

Automated Aspect Mining. Dr. Pollock, 2003. Collaborator: David Shepherd.

Modeling Web Applications for Program Analysis. Dr. Pollock, 2002. Collaborators: Amie Souter & Sreedevi Sampath.

Parallel Processing on a Linux Cluster. Dr. Knox, 2002 – 2003. Collaborator: Jessie Berger.

Question & Answering System Development. Dr. Martinovic, 2001 – 2003. Collaborator: Christina Grape.

REFERENCES

Available on request.